EXERCISE 1
Understanding Validity and Reliability

Time: 30 minutes

Purpose: Practice reviewing factors that influence assessment validity and reliability

Outcome: A list of positive and negative validity and reliability issues for each assessment procedure, as well as recommended changes to improve assessment validity and/or reliability

Report: Provide a review of findings and recommendations for one assessment procedure (3 minutes)

Instructions:

A. The goal of this exercise is to gain an understanding of the important concepts of validity and reliability, as they pertain to the development of assessment procedures.

Your tools for this exercise are:

- Lecture slides on validity and reliability.
- Attachment 1, *Hamburger Limbo Assessment Procedures*.
- Attachment 2, *Validity and Reliability Review of Hamburger Limbo Assessment Procedures.*

B. To get started, get in your small groups and read Attachment 1. Carefully consider all aspects of the portion of the Hamburger Heaven assessment that your group is assigned. As a small group, come up with:

- Positive and negative validity issues.
- Positive and negative reliability issues.
- Recommended improvements for validity and reliability.

In conducting your review, focus on the general assessment content and format and consider how these affect validity and reliability. Please DO NOT concern yourselves with the standards that may be applied for passing and failing each assessment (this will be considered later).

Use Attachment 2 to develop a draft of your ideas; record your group's final answers on your overhead transparency worksheet.

C. Select a spokesperson to present your review to the larger group.

EXERCISE 1
Attachment 1
Hamburger Limbo Assessment Procedures

Hamburger Heaven employee candidates receive a full day of training at Hamburger Limbo. Candidates must successfully complete the following four-part Hamburger Limbo assessment in order to advance to a probationary position at Hamburger Heaven:

1. Computer Administered Multiple-choice Test

- Candidates are administered a multiple-choice test using an MS Windows-based test administration and scoring software program.
- The program requires no keyboard skills. Candidates only need to use the cursor control (mouse) to select their answer to each question and scroll down the screen to view the additional questions.
- The multiple-choice test items consist of 50 questions. Ten items are included from each of the following topics:
    1. Hamburger Heaven mission and vision.
    2. Hamburger Heaven profit goals.
    3. Worker safety.
    4. Server's attire and hygiene requirements.
    5. The four standards of Hamburger Heaven server performance.
- When each question is answered, candidates are not allowed to change their response.
- When all items are completed, the test automatically closes and scores the candidate's responses.

2. Greeting Assessment

- Candidates are seated in a large room with five counters at the front of the stage.
- In sets of five, candidates are instructed to stand behind the counter and greet and take orders from a series of 10 "customers."
- The 10 "customers" are actually professional actors. The "customers" rotate through the five counters ordering Hamburger Heaven products.
- Each "customer" is instructed to verbally abuse the candidates while giving their order.
- An assessor is seated in front of the counter and records whether or not the candidate:
    1. Smiles.
    2. Greets the customer with the company greeting "*We are happy to have you at Hamburger Heaven. May I take your order please?*"
    3. Continues to behave courteously throughout the exchange with the "customer."

3. Order Taking Assessment

- Candidates are given a brief orientation on the HH Integrated Cash Register/Order Placing/Inventory Tracking/Performance Monitoring System (the H-HICROPIRPMS).
- After the orientation, candidates are asked to sit at a table with H-HICROPIRPMS workstation and wear headphones.
- A series of 20 orders, each with an average of five items, are provided over a taped message at a steady pace of a 15-minute period.
- Candidates are required to enter the orders in the H-HICROPIRPMS.
- Candidates are assessed on the basis of errors in the ordering of the 100 items.

4. Order Filling Assessment

- Candidates are put behind the counter again and handed a set of 20 orders, each with an average of five items.
- Candidates are required to fill all 20 orders, placing the correct artificial food item on a tray or in a bag for each order within a 15-minute period.

EXERCISE 1
Attachment 2
Validity and Reliability Review
of Hamburger Limbo Assessment Procedures

ASSESSMENT PROCEDURE:

VALIDITY ISSUES:

Assessment Procedures Positively Affecting Validity

-
-

Assessment Procedures Negatively Affecting Validity

-
-

RELIABILITY ISSUES:

Assessment Procedures Positively Affecting Reliability

-
-

Assessment Procedures Negatively Affecting Reliability

-
-

RECOMMENDATIONS FOR IMPROVING THE ASSESSMENT PROCEDURES:

Improvements to Validity

-
-

Improvements to Reliability

-
-

EXERCISE 1
Understanding Validity and Reliability
Example Solution

ASSESSMENT PROCEDURE: Greeting Assessment

VALIDITY ISSUES:

Assessment Procedures Positively Affecting Validity

- See reaction to difficult customers.
- Role play behind counter.

Assessment Procedures Negatively Affecting Validity

- Candidates see other "customers."
- Candidates learn what to expect.

RELIABILITY ISSUES:

Assessment Procedures Positively Affecting Reliability

- Dedicated assessor.
- Some behavior well-defined.

Assessment Procedures Negatively Affecting Reliability

- "Smile" not well-defined.
- "Courteous" not well-defined.

RECOMMENDATIONS FOR IMPROVING THE ASSESSMENT PROCEDURES:

Improvements to Validity

- Insert this into a broader assessment.
- Assess candidates individually.
- Broader range of customer behavior.

Improvements to Reliability

- Define "smile" better.
- Define "courteous" better.

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Exercise 2
Specifying Assessment Objectives

Time: 30 minutes

Purpose: Practice specifying assessment objectives

Outcome: List of assessment objectives for lifeboat task

Report: List the objectives your group specified (3 minutes)

Instructions:

A. The goal of this exercise is to specify up to six assessment objectives for a lifeboat launching assessment.

Your tools for this exercise include the following five attachments:

1. STCW & CFR Lifeboat Competencies.
2. Launching Procedure for a Gravity Davit Lifeboat.
3. Identifying Assessment Objectives for Lookout Procedures.
4. Identifying Assessment Objectives for ARPA.
5. Lifeboat Launching Assessment Objectives Worksheet.

To get started, spend a few minutes reading Attachments 1 and 2, the lifeboat launching job and task data. Then, review the examples in Attachments 3 and 4 and use them as a guide for the format of your lifeboat launching assessment objectives. Use Attachment 5, the exercise worksheet, to make preliminary notes about your assessment objectives.

B. As a small group, consider the tasks involved in lifeboat launching and specify up to 6 assessment objectives, recording your group's answers on the overhead transparency worksheet.

Remember, each objective specified should describe what the candidate needs to perform successfully to pass the lifeboat launching assessment. Each objective should include:

- An ***action*** (should relate to each *task* you want to observe).
- A set of preliminary ***conditions*** (can include any equipment you use in the assessment, the weather, time, location, and other variables – these conditions are "preliminary" because they will be refined later in the assessment development process in Step 3 – *Specify Assessment Conditions*).
- A set of preliminary ***standards*** (can be derived from STCW and CFR guidelines and best practices of the marine industry – the standards are "preliminary" because they will be refined later in Step 4 – *Develop Proficiency Criteria*).

Example assessment objective: *Given a simulated, relatively complex, at sea scenario with diverse traffic* (condition), *using ARPA calculate the required new course for own ship* (action) *to maintain a minimum CPA of 2 nm between own ship and other vessels* (standard).

C. Select a spokesperson to present the lifeboat launching assessment objectives specified by your group.

EXERCISE 2
Attachment 1
STCW Code & CFR Lifeboat Competencies

STCW Code Table A-VI/2-1: *Specification of the minimum standard of competence in survival craft and rescue boats other than fast rescue boats.*

STCW Competence: Take charge of a survival craft or rescue boat during and after launch.

STCW Knowledge, Understanding, and Proficiency: Various methods of devices used for launching survival craft and rescue boats; methods of launching survival craft into a rough sea.

STCW Table A-VI/2-1 Methods for Demonstrating Competence: Give correct commands for launching and boarding survival craft, clearing the ship and handling and disembarking persons from survival craft. Prepare and safely launch survival craft and clear the ship's side quickly.

46 CFR 12.10 – Lifeboatman §12.10-5 Examination and demonstration of ability.

(a) Before an applicant is certified as a lifeboatman, he or she shall prove to the satisfaction of the Coast Guard by oral or other means of examination, and by actual demonstration, his or her knowledge of seamanship and the ability to carry out effectively all the duties that may be required of a lifeboatman. The applicant shall demonstrate that he or she:

(1) Has been trained in all the operations connected with the launching of lifeboats and life rafts, and in the use of oars;

(2) Is acquainted with the practical handling of boats; and

(3) Is capable of taking command of the boat's crew.

(b) The examination, whether administered orally or by other means, must be conducted only in the English language and must consist of questions regarding:

(1) Lifeboats and life rafts, the names of their essential parts, and a description of the required equipment;

(2) The clearing away, swinging out, and lowering of lifeboats and life rafts, the handling of lifeboats under oars and sails, including questions relative to the proper handling of a boat in heavy sea; and

(3) The operation and functions of commonly used methods of davits.

(c) The practical examination shall consist of a demonstration of the applicant's ability to carry out the orders incident to launching lifeboats, and the use of the boat's sail, and to row.

EXERCISE 2
Attachment 2
Launching Procedure for a Gravity Davit Lifeboat

(1) Boat captain inspects boat and davits prior to deployment.
- Check for potential fouls in lines, ladder.
- Check davit trackways.
- Remove cover / strongbacks as required.

(2) Release the man ropes.
- Check the tricing pendants.

(3) Put the boat plug in.
- Check releasing gear lever – lever down, cotter pin secured.

(4) Rig the sea painter.
- "Rig the sea painter."
- Inboard of the falls, outboard of all else on ship.

(5) Release the gripes.
- "Release the gripes."
- "Heads up."
- Lower to secure position.

(6) Lower to embarkation deck.
- "Lower away."
- Davits should move down trackways together.

(7) Rig frapping lines.
- "Pass and secure frapping lines."
- Secure with a strain.

(8) Embark passengers.
- Keep center of gravity low; hold man ropes.

(9) Trip the tricing pendants simultaneously.
- "Release the tricing pendants."
- Use trip line or hatchet; keep clear of swing of hooks as released.

(10) Tend frapping lines.
- "Ease the frapping lines."
- Slack until falls vertical.

(11) Lower boat to water.
- "Lower away."
- Fend off using boat hooks.

(12) Release falls.
- "Release falls."
- Release at the crest of the wave.

(13) Clear vessel.
- Pass fall blocks.
- Secure man ropes as required to avoid fouling screw.

(14) Release sea painter.
- If releasing sea painter at falls, secure bitter end to fall clear of water.

EXERCISE 2
Attachment 3
Example: Specifying Assessment Objectives For Performance of Lookout Procedures

STCW Code Data

STCW Table A-II/4: *Mandatory minimum requirements for certification of ratings forming part of a navigational watch.*

STCW Function: Navigation at the support level.

STCW Competence: Keep a proper lookout by sight and hearing.

STCW Proficiency: Responsibilities of a lookout, including reporting the approximate bearing of a sound signal, light, or other object in degrees or points.

Additional Task Data

Although it is not specifically addressed in the regulations, it is important that the mariner (1) understand the lookout duties and procedures, particularly as they affect safety on the vessel; and (2) demonstrate lookout techniques. These requirements may be summarized in the following five areas:

- Knowledge of lookout duties and responsibilities.
- Knowledge of lookout-related safety procedures.
- Demonstration of lookout procedures, under various conditions.
- Demonstration of lookout equipment.
- Demonstration of related procedures, such as man overboard and lookout watch relief.

Example Objectives for Lookout Procedures Assessment

Example assessment objectives were derived using the information above as well as consultation with subject matter experts (SMEs):

Assessment Objective 1

Action: Describe lookout duties and responsibilities.

Preliminary Conditions: Examination proctor, test instrument, and any associated references.

Preliminary Standards: Mariner specifies lookout's duties as:

Sighting, identifying, and accurately reporting all objects or sounds detected.

Assessment Objective 2

Action: Identify lookout stations and safe routes onboard.

Preliminary Conditions: Examination proctor, test instrument, and any associated references.

Preliminary Standards: Mariner identifies such common lookouts, and the following relevant safe routes, of:

1. Bridge.
2. Bridge wings.
3. Bow.

Assessment Objective 3

Action: Describe and identify international distress signals.

Preliminary Conditions: Examination proctor, test instrument, and any associated references.

Preliminary Standards: Mariner identifies and describes some of the following international distress signals:

- Red star shells.
- Fog horn continually sounding.
- Flames or smoke on a vessel.
- Gun fired at intervals of 1 minute.
- SOS.
- "Mayday" by radio.
- Parachute red flare.
- Wave arms.
- Etc.

Assessment Objectives 4-6

Action: Demonstrate lookout techniques and make lookout reports.

Preliminary Conditions: Clear lookout station properly equipped; reportable objects in sight; conditions of 1) Daylight, clear visibility, 2) night, clear visibility, 3) restricted visibility (day or night).

Preliminary Standards: Mariner correctly performs the following actions:

1. Identifies six of the relevant and appropriate sightings that should be reported when detected by the lookout.
2. Reports sighted surface objects using ship's bell.
3. Reports sighted surface objects verbally using a) degrees and b) points.
4. Reports sighted sky objects verbally using points.
5. Reports audible targets verbally using points.

Assessment Objective 7

Action: Demonstrate the use of lookout equipment.

Preliminary Conditions: Clear lookout station properly; reportable objects in sight; any of the following conditions of visibility: 1) Daylight, clear visibility, 2) night, clear visibility, 3) restricted visibility (day or night).

Preliminary Standards: Mariner correctly identifies and demonstrates use of the following equipment:

1. Ship's bell.
2. Internal communications system.
3. Binoculars.
4. Bearing repeater fitted with bearing/azimuth circle, alidade, or pelorus.
5. Personal equipment.

Assessment Objective 8

Action: Demonstrate man overboard procedures.

Preliminary Conditions: Clear lookout station properly equipped; reportable objects in sight; any of the following conditions of visibility: 1) Daylight, clear visibility, 2) night, clear visibility, 3) restricted visibility (day or night); assessor simulates man overboard to starboard or port.

Preliminary Standards: Mariner correctly performs the following tasks:

1. Throwing of ring life buoy.
2. Sounding of alarm/reporting man overboard to the bridge.
3. Keeps the victim in sight at all times.

Assessment Objective 9

Action: Demonstrate lookout watch relief procedures.

Preliminary Conditions: Clear lookout station properly equipped; reportable objects in sight; any of the following conditions of visibility: 1) Daylight, clear visibility, 2) night, clear visibility, 3) restricted visibility (day or night).

Preliminary Standards: Mariner correctly answers the following questions:

1. When may a lookout leave the lookout station before being relieved?
2. What must be considered before handing over the watch to the watch relief during darkness?
3. What constitutes and adequate watch relief report?
4. What action(s) must be taken if not properly relieved?

EXERCISE 2
Attachment 4
Example: Specifying Assessment Objectives for ARPA[1]

In an example ARPA assessment, McCallum, et al. (1999) divides ARPA knowledge and skill into six areas. Below are the assessment objectives for the third area, "knowledge of factors affecting performance and accuracy; and ability to operate and interpret system performance and accuracy, tracking capabilities and limitations, and processing delays." The rest of the example ARPA assessment objectives can be found in Appendix A of the report, *Developing Performance-based Assessments of Mariner Proficiency*.

Assessment Objective	STCW Reference	Assessment Conditions	Performance Measure
Knowledge of effects of limitations of radar range and bearing on the accuracy of ARPA data	24.1 Sect. B-I/12	**Exercise F** Three vessels on same initial bearing, with two on collision course; and fourth vessel on a different bearing Instructions to report valid target data ASAP	3.3.1. Reported vessel data
The circumstances causing "target swap" and its effects on display data	25.4 Sect. B-I/12	**Exercise C** Vessels in open water passing one another and buoys	3.2.1 Identification of pairs of targets where swap is likely to occur
The effects on tracking of "lost" targets and target fading	25.3 Sect. B-I/12	**Exercise A** Loss of target track and sounding of "target lost" alarm	3.3.1 Identification of lost target alarm 3.3.2 Reacquisition of lost target
An appreciation of the IMO performance standards for ARPA, in particular the standards relating to accuracy	22.0 Sect. B-I/12	**Written test** (administered at the end of Exercise F)	3.4.1 Correct responses to written test

[1] Excerpted from Appendix A of McCallum, M. C., Forsythe, A. M., Smith, M.W Nunnenkamp, J. M., & Sandberg, G. R.. (1999). *Developing performance-based assessments of mariner proficiency*. (Report Number R&DC-202-99). Groton, CT: USCG R&D Center.

EXERCISE 2
Attachment 5
Lifeboat Launching Assessment Objectives Worksheet

ASSESSMENT OBJECTIVE 1

Action:

Preliminary Condition(s):

Preliminary Standard(s):

ASSESSMENT OBJECTIVE 2

Action:

Preliminary Condition(s):

Preliminary Standard(s):

ASSESSMENT OBJECTIVE 3

Action:

Preliminary Conditions:

Preliminary Standards:

ASSESSMENT OBJECTIVE 4

Action:

Preliminary Condition(s):

Preliminary Standard(s):

ASSESSMENT OBJECTIVE 5

Action:

Preliminary Condition(s):

Preliminary Standard(s):

ASSESSMENT OBJECTIVE 6

Action:

Preliminary Conditions:

Preliminary Standards:

EXERCISE 2
Specifying Assessment Objectives
Example Solution

Assessment Objective 1

Action: Person in charge carries out proper inspections.

Conditions: Lifeboat is available for assessment purposes. The boat is clear and the assessor can observe activities. The following conditions can be varied:

1. The sea painter is fouled, missing or not made fast properly.
2. One or both tricing pendants are not secured or are secured improperly.
3. The man ropes are fouled.
4. The drain plug cap is missing or damaged.
5. Rudder, tiller or other equipment is missing or damaged.
6. The frapping lines are fouled or missing.

Preliminary standards: The person in charge inspects the lifeboat, falls and davit. Using proper commands and nautical terminology he/she demonstrates consideration and supervises the proper performance of the following steps:

1. Insures the lifeboat releasing gear is attached properly to the falls.
2. Checks to make sure the releasing gear lever is in the proper position (lever down), with the pin in place.
3. Insures the tricing pendent is in place and secured properly.
4. Insures that the sea painter is clear, attached to the thwart properly and ready to lead out.
5. Checks the drain plug cap is in good condition and ready for proper placement.
6. Checks general condition and arrangement of boat equipment.
7. Determines that the man ropes are not fouled.
8. Insures the davit tracks are clear.
9. Makes sure the frapping lines are in place and ready to be passed.
10. Insures that the hand crank is in the stowed position.

Assessment Objective 2

Action: The person in charge prepares the lifeboat for launching.

Conditions: Lifeboat is available for assessment purposes. The boat is clear and the assessor can observe activities. The following conditions can be varied:

Sea painter is secured improperly to the thwart or not secured at all.

One or both tricing pendants are secured to the falls improperly or not at all.

Preliminary standards: The person in charge prepares the boat for lowering. Using the proper commands and nautical terminology he/she demonstrates consideration and supervises the proper performance of the following steps:

1. Puts the drain plug cap on.
2. Leads out the sea painter, forward, inboard of the falls outboard of everything else on the vessel. Secures the painter to the thwart if necessary.
3. Lowers man ropes.
4. Makes tricing pendants fast if necessary.
5. Releases the gripes insuring that all personnel are clear and out of the lifeboat.
6. Removes gripes from the lifeboat.
7. Insures that the locking bars are clear of the davit tracks.

Assessment Objective 3

Action: The person in charge lowers the lifeboat to the embarkation deck.

Conditions: Lifeboat is available for assessment purposes. The boat is clear and the assessor can observe activities.

Preliminary standards: The person in charge lowers the boat to the embarkation deck. Using the proper commands and nautical terminology he/she demonstrates consideration and supervises the proper performance of the following steps:

1. Clears all personnel from the area around and under the lifeboat.
2. Insures no one has his/her hands on the davit tracks.
3. Raises the brake handle lowering the boat slowly.
4. Lowers the boat to the embarkation deck. The tricing lines bringing the boat to the side of the ship.
5. Insures that the lifeboat does not slam into the side of the ship due to lowering it too fast or too far.

Assessment Objective 4

Action: The person in charge embarks the crew and passengers.

Conditions: Lifeboat is available for assessment purposes. The boat is clear and the assessor can observe activities.

Preliminary standards: The person in charge lowers the boat to the embarkation deck. Using the proper commands and nautical terminology he/she demonstrates consideration and supervises the proper performance of the following steps:

1. Passes and secures the frapping lines properly. They are secured under a strain with no slack. They must be secured so that they can be slacked without jamming.
2. Insures that all crew and passengers are wearing lifejackets properly.
3. Boards the crew and passengers in lifeboat.
4. Insures that all personnel are seated and holding on to a man rope.
5. Releases the tricing pendants using the tripping lines insuring that all personnel are clear of the hook and pendant as it swings clear.
6. Slacks the frapping lines easing the lifeboat outboard until the falls are vertical.

Assessment Objective 5

Action: The person in charge lowers the lifeboat to the water.

Conditions: Lifeboat is available for assessment purposes. The boat is clear and the assessor can observe activities.

Preliminary standards: The person in charge lowers the boat to the water. Using the proper commands and nautical terminology he/she demonstrates consideration and supervises the proper performance of the following steps:

1. Raises the brake handle lowering the lifeboat to the water's edge.
2. Insures no crew or passengers are fouled in man ropes.
3. Fends the lifeboat off from the side of the ship if necessary.

Assessment Objective 6

Action: The person in charge of the boat clears the lifeboat away from the ship.

Conditions: Lifeboat is available for assessment purposes. The boat is clear and the assessor can observe activities.

Preliminary standards: The person in charge of the boat clears the boat away from the ship. Using the proper commands and nautical terminology he/she demonstrates consideration and supervises the proper performance of the following steps:

1. Releases the falls taking care that no personnel are knocked overboard or injured by the blocks or falls.
2. Fends the boat away from the ship if necessary.
3. Releases the sea painter.

EXERCISE 3
Determining Assessment Methods

Time: 15 minutes

Purpose: Practice determining appropriate assessment methods

Outcome: Appropriate assessment methods for six lifeboat assessment objectives

Report: Explain which assessment method(s) you selected for each objective and why (2 minutes)

Instructions:

A. The goal of this exercise is to select the most appropriate assessment method for each of your lifeboat launching assessment objectives. Remember that the basic assessment methods are:

- Written or oral questions.
- Simulation using mock equipment (e.g., a personal computer interface in lieu of an actual radar screen.).
- Simulation in a laboratory using actual equipment.
- Shipboard assessments.

For a comparison of these assessment methods, see Attachment 1, *Pros and Cons of Basic Assessment Methods*. For an example of the considerations involved in selecting assessment methods, refer to Attachment 2, *Determining Assessment Methods for Lookout Procedures*. Use Attachment 3, *Lifeboat Launching Assessment Methods Worksheet*, to make notes as you consider which assessment method to use for each objective.

B. To determine the appropriate assessment method for each lifeboat launching objective, discuss the following questions in your small group:

- What *performance* must be assessed?
  - Review the assessment objectives specified in Exercise 2.
  - Consider how the task is initiated.
  - Consider what the result of task performance is.
  - Consider the process of performing the task.
- Review realism (validity) requirements.
  - Environment/setting.
  - Controls.
  - Displays.
  - Processing characteristics.
- Review control (reliability) requirements.
  - Key skill and knowledge requirements.
  - Variability of task conditions.
  - Comparability of assessment conditions.

- What assessment methods are *feasible*?
  - Can the performance be measured via written assessment?
  - Can a simulator or laboratory replicate the conditions closely enough to cue the behavior?
  - Can the performance be easily and safely elicited onboard ship?
  - Which method is the easiest, cheapest, safest, and most legally defensible?

NOTE: If you select shipboard assessment as the method for any objective, specify whether the assessment should be underway or in port.

C. Record your group's answers on an overhead transparency worksheet, and select a spokesperson to present your assessment methods and rationale to the larger group.

EXERCISE 3
Attachment 1
Pros and Cons of Basic Assessment Methods

Assessment Method	Pros	Cons
Written or oral	- Easy to create - Easy to standardize - Easy to test many at once - Good for measuring knowledge	- May have poor similarity to work environment - Candidate needs good verbal skills
Simulation using mock equipment	- High control - Safe	- May be expensive - May have poor similarity to work environment - Usually need one assessor per candidate
Simulation in a laboratory using actual shipboard equipment	- High control - Safe - May have high similarity to work environment	- May be expensive - Usually need one assessor per candidate
Shipboard	- May be inexpensive - Uses actual work setting	- Usually need one assessor per candidate - May be difficult to fit into operational schedule - More difficult to standardize and score - Task may be infrequent or dangerous

EXERCISE 3
Attachment 2
Example: Determining Assessment Methods for Lookout Procedures

Additional Considerations in Assessment Method Selection:

1. Assessment Requirements.
   - Knowledge of lookout duties and procedures.
   - Correct use and operation of lookout techniques, reporting, and equipment.
2. Assessment Constraints.
   - Must not interfere with vessel safety.
   - Equipment must be available and operational.
   - Scheduling to allow for conditions of clear visibility in daylight and at night, plus restricted visibility during day or night.

Selection of Assessment Method:

Written or oral test questions are needed to assess knowledge of lookout duties and procedures, covering Assessment Objectives 1 to 3.

Correct use and operation of lookout techniques, reporting, and equipment requires shipboard or simulator assessment. Shipboard assessment offers the highest degree of validity, making a very good choice of assessment method provided that the constraints discussed above are met.

EXERCISE 3
Attachment 3
Lifeboat Launching Assessment Methods Worksheet

Assessment Objective	Assessment Method
1. Carry out proper inspections	
2. Prepare lifeboat for launching	
3. Lower lifeboat to the embarkation deck	
4. Embark crew and passengers	
5. Lower lifeboat to the water	
6. Clear lifeboat away from the ship	

EXERCISE 3
Determining Assessment Methods
Example Solution

Considerations in assessment method selection

1. Is written, knowledge-based assessment appropriate? Is it sufficient?
2. Availability of lifeboat and davit.
3. Operational safety.
4. Possibility of damaging a vessel's lifesaving equipment.
5. Ability to vary conditions on equipment to be used.
6. Alternate methods available, such as lifeboat models.

Discussion of considerations

1. A written or oral assessment:
   a) Would be useful in determining a candidate's knowledge of lifeboat launching procedures, terminology, and regulations.
   b) Is not a measure of a candidate's ability to either carry out or perform the tasks needed to be done in launching the boat.
   c) Has poor face validity.
   d) Offers a high degree of reliability.
2. Availability of lifeboats is high. All vessels are equipped with them. In addition, most training facilities have available for training a lifeboat and davit either installed on a pier or aboard a training vessel.
3. Operational safety must not be compromised and would always be a primary concern. Assessors must be extremely careful to guard against candidates falling overboard or being injured by equipment. For this reason, not all objectives can be carried out while the vessel is underway. It may also be necessary for the assessor to step in and stop or correct a procedure before an accident occurs.
4. Damaging the lifesaving equipment aboard a vessel is a concern. Damaged equipment could put the ship's crew at risk or cause delays in port while equipment is repaired or replaced. This would not be as critical if the assessment were carried out at a training institution where equipment is dedicated for training, not lifesaving.
5. The ability to vary conditions of the assessment would be the same for lifeboats aboard an operating vessel or lifeboats at a training institution. There would be a natural reluctance for a vessel's crew to alter conditions in a lifeboat.
6. Model lifeboats can be used to assess lifeboat competency. However, they have poor face validity and most mariners consider them a poor substitute for a real lifeboat.

Example assessment method

1. Lifeboats aboard an operating vessel or at a training institution could be used.
2. If a lifeboat aboard a vessel was used only objectives 1 - 3 could be assessed at sea while the vessel was underway. Objectives 4 - 6 would have to be assessed when the vessel was in port. At a training institution, all objectives could be assessed at one time.

EXERCISE 4
Specifying Assessment Conditions

Time: 20 minutes

Purpose: Practice specifying assessment conditions

Outcome: Assessment conditions for one lifeboat assessment objective

Report: List the conditions your group specified (2 minutes)

Instructions:

A. The goal of this exercise is to specify assessment conditions for one lifeboat launching assessment objective. Each group is assigned a different objective; see your group's overhead transparency worksheet for the objective that you have been assigned.

B. To get started, refer back to the preliminary conditions that you specified for this objective in Exercise 2, and the assessment method that you specified for this objective in Exercise 3. Consider these as you specify the conditions for this exercise.

Attachments 1 and 2 provide you with some examples of assessment conditions for the lookout procedures assessment and ARPA assessment. Use these examples as a guide for the format of the assessment conditions you specify for your lifeboat launching assessment.

Remember that your conditions should include:

- Candidate orientation.
- Equipment, apparatus, and tools.
- Initial equipment settings or scenarios.
- Written or oral questions.

C. Use Attachment 3, *Lifeboat Launching Assessment Conditions Worksheet*, to do a preliminary outline of the assessment conditions for your assessment objective. Record your final answers on your overhead transparency worksheet.

D. Select a spokesperson to tell the larger group the assessment conditions your group specified and your rationale.

EXERCISE 4
Attachment 1
Example: Specifying Assessment Conditions for Lookout Procedures

Discussion of requirements and constraints for Assessment Objective 4

1. Assume shipboard assessment and/or ship bridge simulator assessment, oral or written test questions.
2. Review the preliminary conditions under Assessment Objective 4.
3. Ensure that equipment is available and operational.
4. Ensure safe operation of vessel and proper safety procedures.

Assessment Objective Measured:

Demonstrate lookout techniques and make lookout reports in clear visibility during daylight.

Candidate Orientation:

- Assessor briefs the candidate on assessment methods, conditions, and standards.

Equipment, Apparatus, and Tools:

- The candidate should be posted at a lookout station equipped with an internal communications system, ship's bell, 7x50 individual eye focus binoculars, and bearing repeater fitted with a bearing/azimuth circle, alidade, or pelorus. The lookout station should be clear, and the assessor must be able to observe activities.

Initial Equipment Settings or Scenarios:

- The assessment should be conducted in clear visibility during daylight. The assessor should ensure that there are reportable objects in sight.

Written or Oral Questions:

- Identify six of the sightings that should be reported when detected by the lookout.

EXERCISE 4
Attachment 2
Example: Specifying Assessment Conditions for ARPA

The following exercise is one of seven exercises comprising the example ARPA assessment in *Developing Performance-based Assessments of Mariner Proficiency* (McCallum et al., 1999). The other exercises, candidate worksheets, and assessor instructions can be found in appendices B, C, and D of that report.

Assessment Objective Measured:

Understanding of when to use ground- or sea-stabilized modes, and when to use north-up, course-up, and head-up presentations.

Exercise E

Candidate Orientation

- Assessment is conducted using a full-scale functional ARPA in a laboratory setting.
- Narrow channel navigation.
- Cross current and/or wind requiring "crabbing" of ship down the channel; crabbing is facilitated by ground stabilized presentation method.
- Own ship is outbound.
- One threat vessel is inbound.

Equipment, Apparatus, and Tools

1. Full-scale ARPA Simulator.
2. ARPA Set-Up Instructions.
    a. Initialize your ARPA unit with a ground-stabilized presentation method.
    b. Set autodrift (groundlock) to target bearing 172° at 4 nm.
    c. Avoid collisions or groundings.
3. Target Information Forms.
    a. Record vessel data for any inbound target(s), and include the time you recorded the data for each target:

Initial Bearing	Target	Course	Speed	CPA	TCPA	Time
	A					
	B					

EXERCISE 4
Attachment 2 (cont.)

Initial Equipment Settings or Scenarios:

1. Vessel data at 1100:00 (approximate).

Target	Bearing	Range	Course	Speed	CPA	TCPA
Own ship	NA	NA	180	15	NA	NA
A	167	7.0	347	11	0.2	17.5

2. Detailed scenario description.

Time	Phase	Event	Objective Number	Performance Measure	Correct Response
1100:00	Set-up	Operator is given a chartlet	NA	NA	NA
1100:00	Set-up	Operator is instructed to use ground-stabilized presentation method	1.1	Measured in Exercise A	See Exercise A
1101:00	Simulation	Operator instructed to set autodrift to target bearing 172° at 4 nm	1.3	Measured in Exercise A	See Exercise A
1101:00	Simulation	Operator navigates own ship through channel avoiding buoys, land, and other target	1.6	1.6.1 Maintenance of ship position and course	Bearing of 180° maintained with no groundings
1102:00	Simulation	Operator instructed to record vessel data for any inbound target(s)	2.6	Measured in Exercises A, C, D	See Exercises A, C, D
1113:00	Simulation	After passing under bridge, operator reports lights that would be seen on Target *A* from 1113:00 to 1115:00	1.6	1.6.2 Determination of aspect of other vessel	Green lights

Written or oral question (one):

Your vessel is under your control: What color lights should you see on the inbound target when you emerge from under the Verrazano Bridge, at about 1113:00?

EXERCISE 4
Attachment 3
Lifeboat Launching Assessment Conditions Worksheet

Assessment Objective:
Assessment Method:
Candidate Orientation:
Equipment, Apparatus, and Tools:
Initial Equipment Settings or Scenarios:
Written or Oral Questions:

EXERCISE 4
Specifying Assessment Conditions
Example Solution

Discussion of assessment requirements and constraints

1. Assume shipboard assessment of Assessment Objective 1, "person in charge carries out proper inspections."
2. Review the conditions under Objective 1 and determine if any of the conditions should be modified to assess the candidate's performance.
3. Determine the appropriate time to carry out the assessment taking into account, normal shipboard routine, weather / sea conditions, and status of the equipment.
4. Review the working space in and around the lifeboat to determine the position of the assessor. Assessor's position should allow adequate observation of the individual's performance.
5. Review steps necessary to ensure safety.
6. Ensure the person being assessed has sufficient knowledge, training and experience to complete Objective 1.

Example assessment conditions

Assessment Objective

Lifeboat launching pre-start checks.

Assessment method

Shipboard.

Candidate Orientation

The assessor should brief the candidate on what objective will be assessed.

The candidate will be instructed that he/she may order other crewmembers to carry out inspections. He/she must use proper commands and supervise the crewmembers closely, ensuring the inspection is carried out properly.

Equipment, Apparatus, and Tools

Fully functional lifeboat and launching equipment

Initial Equipment Settings or Scenarios

The assessment will be conducted during the weekly abandon ship drill under weather and sea conditions that will allow assessment to be carried out safely.

The assessment will start with the lifeboat secured in the stowed position.

Written or Oral Questions

None provided.

EXERCISE 5
Developing Performance Measures

Time: 45 minutes

Purpose: Practice developing performance measures

Outcome: List of multiple performance measures for selected lifeboat assessment objectives

Report: List the measures that your group selected (5 minutes)

Instructions:

A. The goal of this exercise is to develop performance measures for up to 6 lifeboat launching assessment objectives.

Your tools for this exercise are:

- Your group's responses to Exercises 2-4 (assessment objectives, method, and conditions).
- Attachment 1, *Developing Performance Measures for Rules of the Road.*
- Attachment 2, *Developing Performance Measures for Lookout Procedures.*
- Attachment 3, *Lifeboat Launching Performance Measures Worksheet.*

B. To get started:

- Review your outputs from Exercises 2-4 (assessment objectives, method, and conditions).
- Consider the basic performance requirements of lifeboat launching.
- Define specific performance measures for each lifeboat launching assessment objective.
- Remember that performance *measures* are procedures for observing and recording performance. They describe either observable actions, or the outcomes of those actions; they do *not* describe how well the candidate has to perform the action(s).
- Try to include both process and product measures.
- Please do NOT specify performance *standards*; they will be the focus of the next exercise.

For examples of performance measures for other types of assessments, review Attachments 1 and 2, which describe Rules of the Road and Lookout Procedures performance measures.

Record your group's answers on your overhead transparency worksheet.

C. Select a spokesperson to tell the group about the performance measures you developed and your rationale.

EXERCISE 5
Attachment 1
Developing Performance Measures for Rules of the Road[2]

Introduction

The steps involved in developing performance measures and standards are depicted in Figure 1 below. Since Exercise 5 is concerned only with performance *measures*, only Steps 1 and 2 are discussed in this document. Steps 3-6, which concern performance *standards*, are discussed in Exercise 6, Attachment 1.

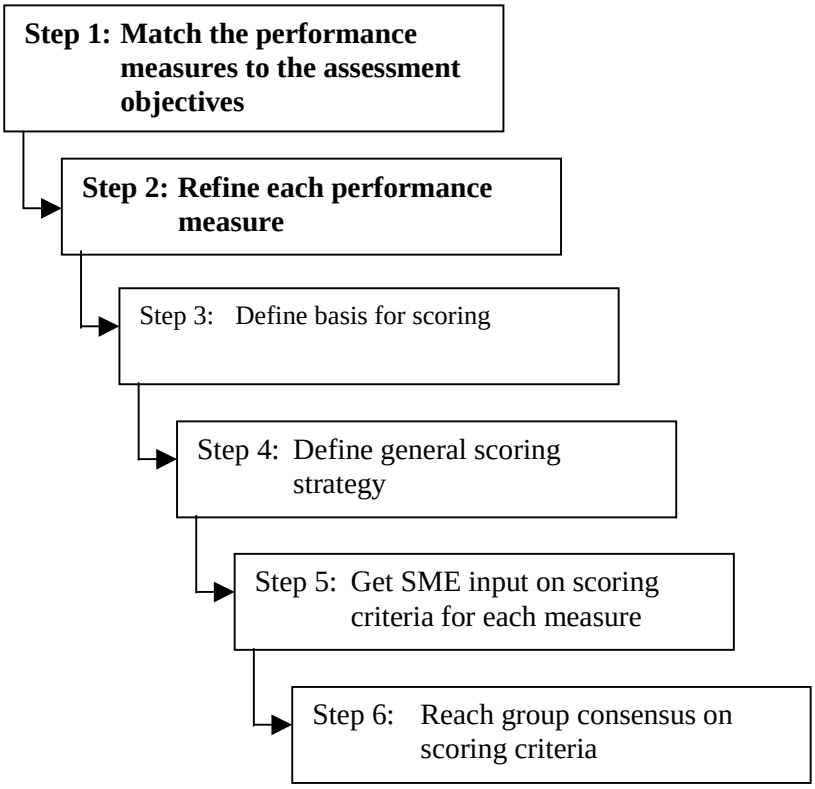

Figure 1. Summary of steps in the development of performance measures and scoring criteria.

Steps 1 and 2 are described below using an example in which a simulator was used to assess knowledge of, and ability to apply, Rules of the Road (ROR).

Steps in the Performance Measure Development Process

Step 1: Match the performance measures to the assessment objectives. The assessment objectives were considered, and three basic requirements of navigation law during watch were

[2] From Smith, M.W., Sandberg, G. R., McCallum, M.C., Stewart, R., Hard, C., Meurn, R., and Baker, D. (1996). *An interactive test of mariner competence*. U.S. Coast Guard Report No. CG-D-04-97.

defined: (1) maintain a good lookout and determine if risk of collision exists; (2) take appropriate action or maneuver to avoid collision; and (3) determine if own ship's action or maneuver was adequate to avoid collision, and ensure that the action or maneuver does not put own ship in a close quarters situation with other vessels.

Step 2: Refine each performance measure. Next, the general performance requirements defined in Step 1 were extrapolated into a series of specific bridge operation measures. Proposed bridge operation measures addressed visual search, binocular viewing, visual bearing, radar viewing, use of sound signals, closest point of approach (CPA), vessel speed, maneuver direction, and action or maneuver to avoid collision. Table 1 summarizes the bridge performance measures developed in this example.

Table 1. Summary of bridge performance measures

Performance Measure	Description
Visual Search	Score based on expert mariners' expected time spent visually searching each of four quadrants of view during the scenario observation period.
Binocular Viewing	Score based on expert mariners' expected frequency of viewing each vessel through the binoculars during the scenario observation period.
Visual Bearing	Score based on expert mariners' expected frequency of visual bearings of each vessel to be taken during the scenario observation period.
Radar Viewing	Score based on expert mariners' expected frequency and total duration of radar viewings during the scenario observation period.
Maneuver Signal	Proportion of times a correct signal was sounded within 30 seconds of a maneuver.
CPA	Score based on expert mariners' expected minimum closest point of approach to other vessels throughout each test scenario.
Radar Maneuver	Score based on expert mariners' expected frequency and total duration of radar viewings during the first six minutes after the first own ship maneuver.
Fog Signal	Score based on expert mariners' expected time of first sounding of the restricted visibility sound signal during the fog scenario.
Fog Speed	Score based on expert mariners' expected time and level of action to reduce speed following radar failure during the fog scenario.
Action or Maneuver	Action or maneuver, and projected CPA with threat vessel following completion of maneuver *(scores not obtained for analysis).*

EXERCISE 5
Attachment 2
Developing Performance Measures for Lookout Procedures

Discussion of requirements and constraints for Assessment Objective 4

1. Assume shipboard assessment and/or ship bridge simulator assessment, oral or written test questions.
2. Review the preliminary standards under Assessment Objective 4 and define performance measures for each.

Assessment Objective Measured

Demonstrate lookout techniques and make lookout reports in clear visibility during daylight.

Preliminary Standards: Mariner demonstrates proper consideration and correct performance of the following actions:

1. Identifies six of the relevant and appropriate sightings that should be reported when detected by the lookout.
2. Reports sighted surface objects using ship's bell.
3. Reports sighted surface objects verbally using a) degrees and b) points.
4. Reports sighted sky objects verbally using points.
5. Reports audible targets verbally using points.

Example performance measures for Assessment Objective 4

1. Candidate answers question *Identify six of the sightings that should be reported when detected by the lookout*.
2. Candidate reports sighted surface objects using the ship's bell.
3. Candidate reports sighted surface objects verbally using degrees.
4. Candidate reports sighted surface objects verbally using points.
5. Candidate reports sighted sky objects verbally using points.
6. Candidate reports audible targets verbally using points.

EXERCISE 5
Attachment 3
Lifeboat Launching Assessment
Performance Measures Worksheet

ASSESSMENT OBJECTIVE: **PERFORMANCE MEASURE(S):**
ASSESSMENT OBJECTIVE: **PERFORMANCE MEASURE(S):**
ASSESSMENT OBJECTIVE: **PERFORMANCE MEASURE(S):**

ASSESSMENT OBJECTIVE:

PERFORMANCE MEASURE(S):

ASSESSMENT OBJECTIVE:

PERFORMANCE MEASURE(S):

ASSESSMENT OBJECTIVE:

PERFORMANCE MEASURE(S):

EXERCISE 5
Developing Performance Measures
Example Solution

The following performance measures could be used for Assessment Objective 1, "person in charge carries out proper inspections":

1. Candidate inspects the releasing gear.
2. Candidate checks releasing gear lever.
3. Candidate inspects tricing pendants.
4. Candidate inspects sea painter.
5. Candidate checks drain plug.
6. Candidate inspects the general condition and arrangement of lifeboat equipment.
7. Candidate inspects man ropes.
8. Candidate inspects davit tracks.
9. Candidate inspects frapping lines.
10. Candidate locates hand crank.
11. Candidate communicates with other crewmembers clearly using proper terminology.

NOTE: The assessor observes the candidate's performance of the above tasks. After performing each task, the candidate reports to the assessor on each measure. If Assessment Objective 2 is also being assessed, then the candidate will be expected to correct any discrepancies found during the assessment of Objective 1.

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EXERCISE 6
Developing Performance Standards

Time: 45 minutes

Purpose: Practice developing and gaining agreement on performance standards

Outcome: Agreed upon standards for one lifeboat launching assessment objective and its associated performance measures

Report: Tell group what standards you agreed upon and why (10 minutes)

Instructions:

A. The goal of this exercise is to develop performance standards for up to 3 lifeboat launching assessment objectives. Pretend you are a group of subject matter experts convening to discuss the performance standards and scoring criteria for a lifeboat launching assessment.

   Your tools for this exercise are:

   - Your group's responses to Exercise 5 (lifeboat launching performance measures).
   - Attachment 1, *Developing Performance Standards for Rules of the Road.*
   - Attachment 2, *Developing Performance Standards for Lookout Procedures.*
   - Attachment 3, *Lifeboat Launching Assessment Performance Standards Worksheet.*

B. To get started, consider the performance measures you developed for each assessment objective in Exercise 5. For each measure, specify:

   - The standard scoring strategy - remember that the strategy can be either pass/fail or graded (e.g., expert, qualified, not qualified).
   - Who you would include in the consensus-gathering meeting.
   - The specifically defined performance standards.
   - Why you chose these standards.
   - How you would combine measures for a single objective (if applicable).

C. For examples of performance standards for other types of assessments, review Attachments 1 and 2.

   Record your group's answers on the overhead transparency worksheet.

D. Select a spokesperson to tell the larger group the performance standards you chose and why.

EXERCISE 6
Attachment 1
Developing Performance Standards for Rules of the Road[3]

Introduction

The steps involved in developing performance measures and standards are depicted in Figure 1 below. Since this exercise is concerned with performance *standards*, only Steps 3-6 are discussed in this document. Steps 1 and 2 are discussed in Exercise 5, Attachment 1.

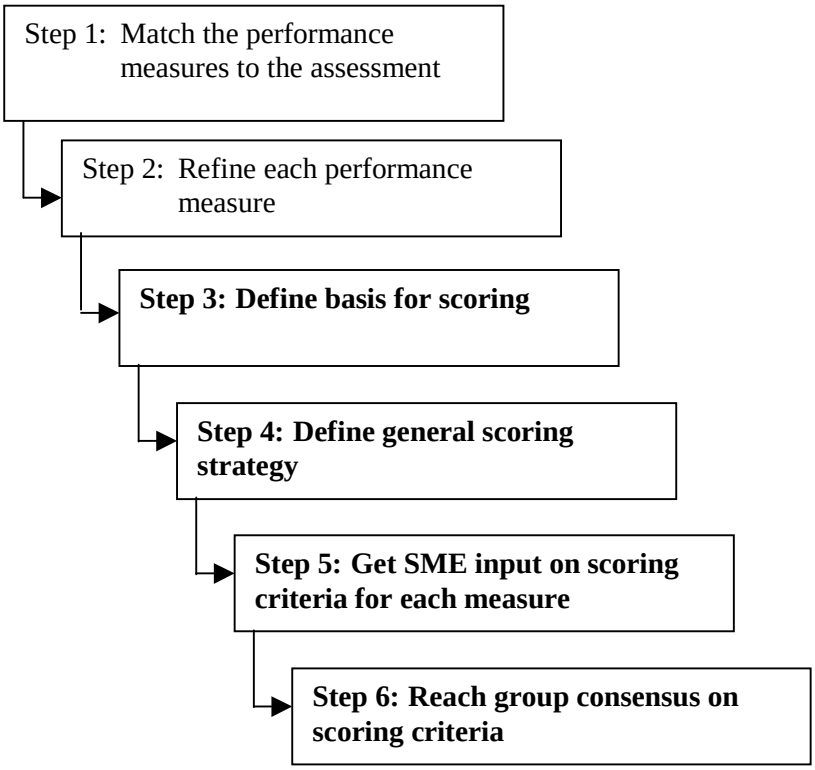

Figure 1. Summary of steps in the development of performance measures and scoring criteria.

Steps 3-6 are described below using an example in which a simulator was used to assess knowledge of, and ability to apply, Rules of the Road (ROR).

[3] From Smith, M.W., Sandberg, G. R., McCallum, M.C., Stewart, R., Hard, C., Meurn, R., and Baker, D. (1996). *An interactive test of mariner competence*. U.S. Coast Guard Report No. CG-D-04-97.

Steps 3-6 in the Performance Standard Development Process

Step 3: Define basis for scoring. Given the specific performance measures, it was necessary to define the basis for scoring. In discussions among the expert mariners, it was determined that one of two general approaches toward scoring would be applied to each bridge operation measure. In most cases, a Proficiency Rating was applied. In selected cases, a Proficiency Qualification criterion was applied, and performance was scored as either "competent" or "not competent." Levels of proficiency and competency were defined as follows:

Proficiency Rating is defined with reference to both navigation law and professional standards. Considering both, it is the consistency of performance with legally mandated actions, as defined by navigation law; and with the indicated level of prudent seamanship (expert, qualified, unqualified) in the operational application of navigation law. These three proficiency ratings are:

- **Expert**: Performance is fully consistent with all legal mandates and meets the highest professional standards of prudent seamanship in the operational application of navigation law.
- **Qualified**: Performance is fully consistent with all legal mandates and meets acceptable professional requirements of prudent seamanship in the operational application of navigational law.
- **Unqualified**: Does not meet one or both of the legally mandated actions and/or acceptable professional requirements of prudent seamanship in the operational application of navigation law.

Proficiency Qualification is defined with reference to navigation law only. It is the consistency of performance with legally mandated actions, as defined by navigation law. The two levels of competency are:

- **Qualified**: Performance is fully consistent with legally mandated actions.
- **Unqualified**: Performance is inconsistent with legally mandated actions.

Step 4: Define general scoring strategy. The next step in the development of performance standards called for the consideration of the general scoring strategy to be employed with each measure. Each performance measure was considered in turn, and the basic parameters to be considered were defined. For example, in the case of Visual Search, it was determined that the Proficiency Rating approach would be applied. Additionally, it was determined that one set of visual search measures would involve the percentage of a test participant's total visual search time in each of the four visual quadrants during the first six minutes of a scenario. Given this definition, it was then recognized that ranges of percentages would be required to define the expert, qualified watchstander, and unqualified levels of performance.

Step 5: Get subject matter expert (SME) input on scoring criteria for each measure. For each bridge operation measure, a modified Delphi technique was employed to define performance standards corresponding to specific Proficiency Rating or Qualification. Basically, the Delphi technique involves an iterative process of review, independent input, and group discussion that continues until a group consensus is reached. During this process, expert mariners reviewed the operational situation for a given test scenario then individually recommended performance standards.

Step 6: Reach group consensus on scoring criteria. The set of recommended performance standards were then reviewed by the group of expert mariners until a consensus standard was obtained for the specific measure and scenario. Table 1 presents the results of this process for the example measure of Visual Search during the first six minutes of a bridge simulator scenario. This table provides the specific ranges of percentages of total Visual Search time that the team of expert mariners judged to correspond to each Proficiency Rating for the conditions in this scenario.

Table 1. Example of a performance standard for the measure of visual search

Percentage of Total Visual Search Time in Each Direction During First Six Minutes				**Performance Rating**
Forward	***Starboard***	***Aft***	***Port***	
35-50	30-45	5-15	5-15	Expert
25-34, 51-80	15-29, 46-80	16-35	16-35	Qualified
Neither Expert nor Qualified				Unqualified

Steps 5 and 6 of this process were repeated for each bridge operation measure in each scenario, resulting in quantitative scoring criteria analogous to those in table 1 for each measure in each scenario.

EXERCISE 6
Attachment 2
Developing Performance Standards for Lookout Procedures

Performance standard requirements and constraints:

1. Assume shipboard assessment and/or ship bridge simulator assessment, oral or written test questions.
2. Review the measures under Assessment Objective 4 and define performance standards for each.

Example performance standards for Assessment Objective 4: *Demonstrate lookout techniques and make lookout reports in clear visibility during daylight.*

OBJECTIVE	MEASURE	STANDARD
4.1 List the sightings that should be reported when detected.	Answers question: Identify six of the sightings that should be reported when detected by the lookout.	Correct response includes 6 of the following sightings: Distress signals; persons in distress; vessels and/or aircraft in distress; derelicts, wreckage, floating, or partially submerged debris; pollution incident; vessel traffic and/or aircraft; aids to navigation (nav. buoys and lights); danger to the vessel or hazards to navigation; reduction in visibility due to fog, mist, falling snow, heavy rainstorms, sandstorms, or any other similar cause; change in weather; hearing other vessels or aids to navigation; ice; unusual sightings or any unreported change in the field of view or sector; sightings of marine life in compliance with the Endangered Species Act / Marine Mammal Protection Act.
4.2 Report sighted objects using the ship's bell.	Reports sighted objects using the ship's bell.	Reports at least 3 surface objects using ship's bell. Improper reporting constitutes failure. Failure to detect visible objects within a specified sector of view constitutes failure.

EXERCISE 6
Attachment 2 (cont.)

OBJECTIVE	MEASURE	STANDARD
4.3 Report sighted objects verbally using degrees.	Reports sighted objects verbally using degrees.	Verbally reports at least 3 surface objects. Reports must be within 22½° of the actual bearing of detected targets. Improper reporting constitutes failure. Failure to detect a visible object within a specified sector of view constitutes failure.
4.4 Report sighted objects verbally using points.	Reports sighted objects verbally using points.	Verbally reports at least 3 surface objects. Reports should indicate: • What (type of objects) • Where (bearings, relative or true) • How far off (hull-down, on the horizon, hull-up, close aboard). Reports must be within $\pm$ 2 points of the actual bearing of the detected targets. Improper reporting constitutes failure. Failure to detect a visible object within a specified sector of view constitutes failure.
4.5 Report sky objects verbally using points.	Reports sighted objects verbally using points.	Verbally reports at least 3 sky objects using points. Reports must be within + 2 points of the actual bearing of detected targets. Improper reporting constitutes failure. Failure to detect a visible object within a specified sector of view constitutes failure.

EXERCISE 6
Attachment 2 (cont.)

4.6 Report audible targets verbally using points.	Reports audible targets verbally using points.	Verbally reports at least 3 audible targets. Reports should indicate: • What (type of objects) • Where (bearings, relative or true) • How far off (hull-down, on the horizon, hull-up, close aboard). Reports must be within ± 2 points of the actual bearing of the detected targets. Improper reporting constitutes failure. Failure to detect a visible object within a specified sector of view constitutes failure.
FINAL SCORE: ❑ Pass ❑ Fail		

EXERCISE 6
Attachment 4
Lifeboat Launching Assessment
Performance Standards Worksheet

ASSESSMENT OBJECTIVE:

PERFORMANCE MEASURE(S):

STANDARD SCORING STRATEGY *(pass/fail or graded)*:

WHO WOULD BE INCLUDED IN THE CONSENSUS GATHERING MEETING:

PERFORMANCE STANDARD(S):

WHY YOU CHOSE THESE STANDARDS:

HOW YOU WOULD COMBINE MEASURES *(if applicable)*:

ASSESSMENT OBJECTIVE:

PERFORMANCE MEASURE(S):

STANDARD SCORING STRATEGY *(pass/fail or graded)*:

WHO WOULD BE INCLUDED IN THE CONSENSUS GATHERING MEETING:

PERFORMANCE STANDARD(S):

WHY YOU CHOSE THESE STANDARDS:

HOW YOU WOULD COMBINE MEASURES *(if applicable)*:

ASSESSMENT OBJECTIVE:

PERFORMANCE MEASURE(S):

STANDARD SCORING STRATEGY *(pass/fail or graded)*:

WHO WOULD BE INCLUDED IN THE CONSENSUS GATHERING MEETING:

PERFORMANCE STANDARD(S):

WHY YOU CHOSE THESE STANDARDS:

HOW YOU WOULD COMBINE MEASURES *(if applicable)*:

EXERCISE 6
Developing Performance Standards
Example Solution

Performance standard requirements and constraints:

- Assume shipboard assessment of Assessment Objective 1 "person in charge carries out proper inspections."
- Review the 11 performance measures and preliminary standards for Assessment Objective 1 and develop a set of performance standards for each performance measure.
- Determine the basis for scoring criteria. Will a graded or pass/fail strategy be used for scoring?
- Determine if assessment of Objective 1 will use individual or combined criteria. Will the failure to carry out one or more of the performance measures properly result in an automatic failure for the objective? (**Note**: In an overall lifeboat assessment, it must be determined if the failure of any of the objectives would result in the failure of the lifeboat exam).

Example performance standards for Assessment Objective 1:

1. **Measure**: Candidate either properly inspects, or orders and supervises the inspection of, releasing gear.

   Standard: Candidate correctly reports the condition of the releasing gear.

2. **Measure**: Candidate either properly inspects, or orders and supervises the inspection of, releasing gear lever.

   Standard: Candidate correctly reports the condition of the releasing gear lever.

3. **Measure**: Candidate either properly inspects, or orders and supervises the inspection of, tricing pendants.

   Standard: Candidate correctly reports the condition of the tricing pendants.

4. **Measure**: Candidate either properly inspects, or orders and supervises the inspection of, sea painter.

   Standard: Candidate correctly reports the condition of the sea painter.

5. **Measure**: Candidate either properly inspects, or orders and supervises the inspection of, drain plug.

   Standard: Candidate correctly reports the condition of the drain plug.

6. **Measure**: Candidate either properly inspects, or orders and supervises the inspection of, the general condition and arrangement of lifeboat equipment.

   Standard: Candidate correctly reports the condition of the lifeboat equipment.

7. **Measure**: Candidate either properly inspects, or orders and supervises the inspection of, man ropes.

   Standard: Candidate correctly reports the condition of the man ropes.

8. **Measure**: Candidate either properly inspects, or orders and supervises the inspection of, davit tracks.

   Standard: Candidate correctly reports the condition of the davit tracks.

9. **Measure:** Candidate either properly inspects, or orders and supervises the inspection of, frapping lines.

   Standard: Candidate correctly reports condition of the frapping lines.

10. **Measure**: Candidate locates the hand crank.

    Standard: Candidate correctly reports its proper location.

11. **Measure**: Candidate gives orders as required.

    Standard: Candidate gives clear, distinct orders using proper terminology without hesitation.

NOTES:

1. Assumes graded level standard strategy is used. Suggested levels are:
   a) **Expert** – Measure is accomplished correctly and efficiently, without hesitation, using proper terminology.
   b) **Qualified** – Measure is accomplished correctly with some thought and hesitation. Minor mistakes in terminology are made which would not result in failure to launch the lifeboat.
   c) **Unqualified** – Measure is not accomplished, or accomplished incorrectly. Terminology used is incorrect and might result in misunderstandings.
2. Failure to accomplish measures #1or #2 at the qualified level would result in the automatic failure of the objective. If the releasing gear was not properly engaged, then loss of the lifeboat and/or life would result.